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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BONK, TERESA

ART UNIT PAPER NUMBER

3725

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/756,367	WU, K. U.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Teresa M. Bonk	3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: There is an inconsistency between the specifications and the drawing regarding the reference signs of the first and second mandrels. In the specifications, on page 6, line 7, the first mandrel is 50, and line 17, the second mandrel is 70. According to the drawings, the first and second mandrels have reference signs 5 and 7, respectively. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peet (US Patent 2,739,376) in view of Reiche et al. (PG-PUB US 2002/0043089 A1) and Rempe et al. (US Patent 6,826,943) and Otuska et al. (US Patent 6,581,433). Peet discloses a method of performing forming operations on a tube (hollow cylindrical blank 1) including forming a thin section, wherein the thin section has a wall thickness thinner than that of the thick section (see Figure 2 and Column 2, lines 6-25).

4. Regarding claim 2, Peet discloses in Figure 1, the perimeter of an edge of the thick end section of the tube obtained after step (c) is substantially equal to that of the tube obtained after step (b) and before step (c).

5. Peet discloses the invention substantially except for the deforming method of the tube to be by a drawing method. Reiche et al. discloses a method of making a pipe of different wall thickness by drawing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Reiche et al.'s method of drawing to achieve different wall thickness in the tube "for reasons of weight saving" (Column 1, Paragraph 0003).

6. Peet discloses the invention substantially except for having the tube material of an aluminum alloy. Rempe et al. discloses a process for expanding tubes of an aluminum material. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aluminum material for Peet's tube because an aluminum material is less expensive and lasts longer.

7. Peet discloses the invention substantially except for radially and proportionally enlarging the cross-section of the thick end section of the tube by forging in a first die using a first mandrel in such a manner that the wall thickness of the thick end section after being enlarged is substantially the same as that of the thin section and disproportionally varying the cross-section of the thick end section of the tube by forging in a second die and second mandrel.

Otsuka et al. discloses a method of manufacturing a metal pipe with an eccentrically expanded open end including radially and proportionally enlarging the cross-section of the thick end section of the tube by forging (With regards to forging, as claimed, deformation processes are well known in the art, such as punching and pressing. Furthermore, applicant has not stated any criticality to the claimed forging process, page 3.) in a first die using a first mandrel in such a manner that the wall thickness of the thick end section after being enlarged is substantially the same as that of the thin section (coaxially expanding step with punch 10; also see Figure 2A ) and disproportionally varying the cross-section of the thick end section of the tube by forging in a second die and second mandrel (eccentrically expanding step with punch 20; also see Figure 3A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Otsuka et al.'s expanding process with Peet's varying-wall-thicknesses tube in order to prevent cracking or necking of the tube which thin walls could cause (Column 1, lines 37-47) and to allow for a less complicated and less expensive manufacturing process (Column 1, lines 15-17).

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8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peet in view of Reiche et al. and Rempe et al. and Otuska et al. in further view of Lonbani (US Patent 5,671,626). Peet discloses the invention substantially except for wherein the tube is cleaned and subsequently immersed in a lubricant medium before the drawing operation and wherein the tube is partially annealed prior to the drawing operation. Lonbani discloses a method of drawing a tube wherein the tube is cleaned and subsequently immersed in a lubricant medium before the drawing operation and wherein the tube is partially annealed prior to the drawing operation, Figures 1 and 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Lonbani's cleaning and annealing steps with Peet's invention in order to reduce costs (Column 2, lines 28-29).

Regarding claim 5, Peet discloses the claimed invention except for the temperature and time ranges. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the temperature ranging from 350°C to 380°C for 2 to 3 hours, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In further support of the examiner's position, though not relied upon, Blough (US Patent 6,845,522) states, "the tube is optionally annealed to soften or further prepare the material for subsequent forming. As known to those of ordinary skill in the art, the temperatures, times, and types of atmospheres, i.e. air or inert environment, can vary depending on the metal or metal matrix composite utilized" (Column 4, lines 25-30).

*Allowable Subject Matter*

9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record lacks disclosure for the limitations in claim 6, “wherein the aluminum alloy tube is completely annealed prior to the enlarging operation of step (b)” and in claim 7, “wherein the complete annealing operation is conducted at a temperature ranging from 400°C to 420°C for 2 to 3 hours.”

Rempe et al. discloses a process including the steps of expanding a tube and afterwards an annealing step at 300°C.

Hartman et al. (US Patent 5,832,766) discloses a partial annealing step performed at a temperature that is within the range of about 190.5 °C to 288°C.

However the above prior art fails to disclose a reasonable combination of “wherein the aluminum alloy tube is completely annealed prior to the enlarging operation of step (b)... wherein the complete annealing operation is conducted at a temperature ranging from 400°C to 420°C for 2 to 3 hours.”

*Conclusion*

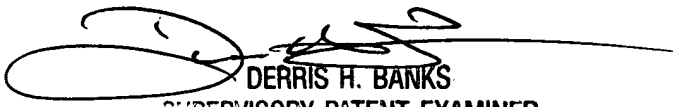
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa M. Bonk whose telephone number is (571) 272-1901. The examiner can normally be reached on M-F 7:30AM - 5PM with alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Derris Banks can be reached on (571) 272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-9900.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Teresa M. Bonk  
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Art Unit 3725



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